IN THE CLAIMS:

Please substitute the following claims for the same-numbered claims in the application:

1.   (Currently Amended) A method for ~~decomposing~~ solving a linear program having material balance and sourcing constraints in a production planning system, said method comprising:

        temporarily removing, by a computer system and based on stocking point criteria, selected ones of said material balance and sourcing constraints from said linear program so that said linear program can subsequently be decomposed into smaller linear programs;

        decomposing, by said computer system, said linear program into said smaller linear programs;

        initially solving, by [[a]] said computer system, ~~said linear program~~ each of said smaller linear programs in parallel and without said selected ones of ~~with~~ said material balance and sourcing constraints to produce an initial solution,

                ~~wherein, during said initially solving, selected ones of said material balance and sourcing constraints are relaxed based on stocking point criteria,~~

                wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills of materials used by said linear program,

                wherein said least complex parts comprise raw materials and unassembled parts, and

wherein said initial solution identifies values for variables in said linear program; and

finally solving, by said computer system, said linear program ~~using said values identified in said initial solution as said variables and~~ with all of said material balance and sourcing constraints in place ~~such that none of said material balance and sourcing constraints are relaxed~~ in order to obtain a complete solution of said linear program, <u>said finally solving comprising replacing said variables with constants, said constants comprising said values identified in said initial solution</u>.

2-3.   (Cancelled).

4.   (Previously Presented) The method in claim 1, wherein said selected ones of said material balance and sourcing constraints are associated with parts that have supply availability and lack capacity constraints.

5.   (Previously Presented) The method in claim 1, wherein said selected ones of said material balance and sourcing constraints are associated with parts that are available during the planning horizon of said linear program.

6.   (Original) The method in claim 5, wherein said planning horizon includes an initial planning horizon, shipping lead time, and manufacturing cycle time.

7.   (Currently Amended) The method in claim 1, wherein said stocking point criteria are ~~associated with~~ based on time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods when said parts will be available.

8.   (Currently Amended) A method for solving a linear program having material balance and sourcing constraints in a production planning system, said method comprising:

identifying, by a computer system and based on stocking point criteria, selected ones of said material balance and sourcing constraints to be temporarily removed from said linear program so that said linear program can subsequently be decomposed into smaller linear programs ~~relaxed,~~

   wherein said selected ones of said material balance and sourcing constraints are
   associated only with the least complex parts within bills-of materials used by said linear
   program, and

   wherein said least complex parts comprise raw materials and unassembled parts;

relaxing said selected ones of said material balance and sourcing constraints of said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints;

temporarily removing, by said computer system, said selected ones of said material balance and sourcing constraints from said linear program;

decomposing, by [[a]] said computer system, said linear program into said smaller linear programs;

initially solving, by said computer system, each of said smaller linear programs <u>in parallel and without said selected ones of</u> ~~with~~ said material balance and sourcing constraints to produce an initial solution,

~~wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed per said relaxing, and~~

wherein said initial solution identifies values for variables in said linear program; and

finally solving, by said computer system, said linear program ~~using said values identified in said initial solution as said variables and~~ <u>with</u> all of said material balance and sourcing constraints in place ~~such that none of said material balance and sourcing constraints are relaxed~~ to obtain a complete solution of said linear program<u>, said finally solving comprising replacing said variables with constants, said constants comprising said values identified in said initial solution</u>.

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9. (Previously Presented) The method in claim 8, wherein said process of initially solving each of said smaller linear programs solves said smaller linear programs simultaneously in parallel.

10. (Cancelled).

11. (Previously Presented) The method in claim 8, wherein said selected ones of said material balance and sourcing constraints are associated with parts that have supply availability and lack capacity constraints.

12. (Previously Presented) The method in claim 8, wherein said selected ones of said material balance and sourcing constraints are associated with parts that are available during the planning horizon of said linear program.

13. (Original) The method in claim 12, wherein said planning horizon includes an initial planning horizon, shipping lead time, and manufacturing cycle time.

14. (Currently Amended) The method in claim 8, wherein said stocking point criteria are ~~associated with~~ based on time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods when said parts will be available.

15. (Currently Amended) A method for solving a linear program having material balance and sourcing constraints in a production planning system, said method comprising:

identifying, by a computer system and based on stocking point criteria, selected ones of said material balance and sourcing constraints to be temporarily removed from said linear program so that said linear program can subsequently be decomposed into smaller linear programs, ~~relaxed based on~~ said stocking point criteria ~~that are associated with~~ being based on

with time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods when said parts will be available,

wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills-of materials used by said linear program, and

wherein said least complex parts comprise raw materials and unassembled parts;

~~relaxing~~ temporarily removing, by said computer system, said selected ones of said material balance and sourcing constraints ~~of~~ from said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints;

decomposing, by [[a]] said computer system, said linear program into said smaller linear programs;

initially solving, by said computer system, each of said smaller linear programs in parallel and without ~~with~~ said selected ones of said material balance and sourcing constraints to produce an initial solution,

~~wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed per said relaxing, and~~

wherein said initial solution identifies values for variables in said linear program; and

finally solving, by said computer system, said linear program ~~using said values identified in said initial solution as said variables and~~ with all of said material balance and sourcing constraints in place ~~such that none of said material balance and sourcing constraints are relaxed~~ to obtain a complete solution of said linear program, said finally solving comprising replacing

said variables with constants, said constants comprising said values identified in said initial solution.

16.   (Previously Presented) The method in claim 15, wherein said process of initially solving each of said smaller linear programs solves said smaller linear programs simultaneously in parallel.

17.   (Cancelled).

18.   (Previously Presented) The method in claim 15, wherein said selected ones of said material balance and sourcing constraints are associated with parts that have supply availability and lack capacity constraints.

19.   (Currently Amended) The method in claim 15, [[,]] wherein said selected ones of said material balance and sourcing constraints are associated with parts that are available during the planning horizon of said linear program.

20.   (Original) The method in claim 19, wherein said planning horizon includes an initial planning horizon, shipping lead time, and manufacturing cycle time.

21.   (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method for solving

a linear program having ~~material balance and sourcing~~ constraints in a production planning system, said method comprising:

identifying, based on stocking point criteria, selected ones of said material balance and sourcing constraints to be ~~relaxed~~ temporarily removed from said linear program so that said linear program can subsequently be decomposed into smaller linear programs,

wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills-of materials used by said linear program, and

wherein said least complex parts comprise raw materials and unassembled parts;

~~relaxing~~ temporarily removing said selected ones of said material balance and sourcing constraints ~~of~~ from said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints;

decomposing said linear program into said smaller linear programs;

initially solving each of said smaller linear programs with said material balance and sourcing constraints to produce an initial solution,

wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed per said relaxing, and

wherein said initial solution identifies values for variables in said linear program; and

finally solving said linear program ~~using said values identified in said initial solution as said variables and~~ with all of said material balance and sourcing constraints in place such that none of said material balance and sourcing constraints are relaxed to obtain a complete solution

of said linear program, said finally solving comprising replacing said variables with constants, said constants comprising said values identified in said initial solution.